

20 FEB 2006

111

SUPERSEDED

9

CLAIMS

1. A method of manufacture of a suspension system for a vehicle seat comprising:
- 5 connecting, in any order, one of two interchangeable top portions;
a first part having a base portion, means to receive the top portion and means to allow movement of the base portion and top portion towards and away from each other;
and one of two interchangeable second parts comprising a spring element
- 10 adapted in use to control movement of the base portion and top portion towards and away from each other; and wherein the top portion and the second part are releasably connected to the first part.
-
2. A method of manufacture of a system according to Claim 1 wherein
- 15 the top portion is provided with an upper surface and a lower surface.
3. A method of manufacture of a system according to Claim 1 or Claim 2 wherein the base portion is provided with an upper surface and a lower surface.
- 20
4. A method of manufacture of a system according to any preceding claim wherein the top portion and the base portion are secured to each other by the provision of at least one pair of pivotally connected arms.
- 25 5. A method of manufacture of a system according to Claim 4 wherein:
- a first arm in each pair has one end pivotally secured to the base portion and a second arm in each pair has one end releasably pivotally secured to the top portion;
- 30 the free end of each second arm is provided with means to allow it to move relative to an upper surface of the base portion; and

FILED 03/04/2006
SUPERSEDED

10

the free end of each first arm is provided with means to allow it to move relative to a lower surface of the top portion.

6. A method of manufacture of a system according to any preceding
5 claim wherein the spring element is an air spring.

7. A method of manufacture of a system according to Claim 6, when
dependent on Claim 5, wherein the air spring is positioned between the
base portion and one of the first and second arms to control movement of
10 the arms relative to the base portion.

8. A method of manufacture of a system according to Claim 6 wherein
~~the air spring is positioned between the first and second arms of the at~~
least one pair of arms to control movement of the arms relative to each
15 other.

9. A method of manufacture of a system according to Claim 7 or 8
wherein the air spring is positioned on a, or between two, suitable
mountings positioned between the first arms or the second arms of a pair
20 of arms.

10. A method of manufacture of a system according to any of Claims 1
to 5 wherein the spring element comprises one or more mechanical
tension springs.

25

11. A method of manufacture of a system according to Claim 10, when
dependent on Claim 5, wherein the or each mechanical tension spring has
a first and a second end and wherein the first end is adapted to act on the
free end of the first arm and the second end of the or each mechanical
30 tension spring is secured to the top portion.

SUPERSEDED

11

12. A method of manufacture of a system according to any of claims 5 to 11 wherein the top portion is generally rectangular having a pair of opposing short sides and a pair of opposing long sides and the top portion is provided with one portion adapted to be releasably secured to each
5 second arm of the first part.

13. A method of manufacture of a system according to Claim 12 wherein the or each portion adapted to be releasably secured to each second arm is preferably a wing extending from the opposing long sides
10 and the or each wing is provided with an aperture therethrough.

14. A method of manufacture of a system according to Claim 13
~~wherein a corresponding aperture is provided through the or each second~~
arm of the first part.

15

15. A method of manufacture of a system according to Claim 14 wherein a pivot bolt is provided of a suitable size to pass through the aperture in each wing and in each second arm.

20 16. A method of manufacture of a system according to any of claims 5 to 15 wherein the means to receive the free end of the or each first arm comprises one or more channels in which the free end of the or each first arm is received and the or each channel is suitably sized to allow movement of the free end of the or each first arm over a lower surface of
25 the top portion within the or each channel as the top part and base part move towards and away from each other.

17. A method of manufacture of a system according to Claim 1 wherein the means to receive the top part and to allow the base portion and the top
30 portion to move towards and away from each other comprise one or more bars designed to extend from the base portion and receive the top portion

SUPERSEDED

12

and being pivotally secured directly between the top portion and the base portion, or by pivotal linkages.

18. A method of manufacture of a system according to Claim 17
5 wherein a spring element is positioned to act in use between the top portion and base portion.

19. A kit for a suspension system for a vehicle seat comprising:
two interchangeable top portions;
10 a first part having a base portion, means to receive one of said top portions and means to allow movement of the base portion and one of said top portions towards and away from each other;
~~two interchangeable second parts each comprising a spring element~~
adapted in use to control movement of the base portion and one of said
15 top portions towards and away from each other; and wherein said top portions and said second parts are adapted to be releasably connected to the first part.

20. A kit according to Claim 19 wherein said top portions are provided
20 with an upper surface and a lower surface.

21. A kit according to Claim 19 or Claim 20 wherein the base portion is provided with an upper surface and a lower surface.

22. A kit according to any of claims 19 to 22, where, in use, said top
25 portions and the base portion are secured to each other by the provision of at least one pair of pivotally connected arms.

23. A kit according to Claim 22 where, in use,

REVISED 03/04/2006
SUPERSEDED

13

a first arm in each pair has one end pivotally secured to the base portion and a second arm in each pair has one end releasably pivotally secured to one of said top portions;

- the free end of each second arm is provided with means to allow it to
5 move relative to an upper surface of the base portion; and
the free end of each first arm is provided with means to allow it to move relative to a lower surface of one of said top portions.

24. A kit according to any of claims 19 to 23 wherein one of said
10 spring elements is an air spring.

25. A kit according to Claim 24, when dependent on Claim 23, where,
~~in use, the air spring is positioned between the base portion and one of~~
the first and second arms to control movement of the arms relative to the
15 base portion.

26. A kit according to Claim 24 where, in use, the air spring is
positioned between the first and second arms of the at least one pair of
arms to control movement of the arms relative to each other.

20

27. A kit according to Claim 25 or 26 where, in use, the air spring is
positioned on a, or between two, suitable mountings positioned between
the first arms or the second arms of a pair of arms.

- 25 28. A kit according to any of Claims 19 to 23 wherein one of said
spring elements comprises one or more mechanical tension springs.

29. A kit according to Claim 28, when dependent on Claim 23,
wherein the or each mechanical tension spring has a first and a second
30 end and wherein the first end is adapted to act on the free end of the first

SUPERSEDED

14

arm and where, in use, the second end of the or each mechanical tension spring is secured to the top portion.

30. A kit according to any of claims 23 to 29 wherein said top portions
5 are generally rectangular having a pair of opposing short sides and a pair of opposing long sides and said top portions are provided with one portion adapted to be releasably secured to each second arm of the first part.
- 10 31. A kit according to Claim 30 wherein each portion adapted to be releasably secured to each second arm is preferably a wing extending from the opposing long sides and each wing is provided with an aperture therethrough.
-
- 15 32. A kit according to Claim 31 wherein a corresponding aperture is provided through the or each second arm of the first part.
33. A kit according to Claim 32 wherein a pivot bolt is provided of a
20 suitable size to pass through the aperture in each wing and in each second arm.
34. A kit according to any of claims 23 to 33 wherein the means to
25 receive the free end of the or each first arm comprises one or more channels in which the free end of the or each first arm is received and the or each channel is suitably sized to allow movement of the free end of the or each first arm over a lower surface of one of said top portions within the or each channel as the top part and base part move towards and away from each other.
- 30 35. A kit according to Claim 19 wherein the means to receive the top part and to allow the base portion and one of said top portions to move

towards and away from each other comprise one or more bars designed to extend from the base portion and receive one of said top portions and being pivotally secured directly between one of said top portions and the base portion, or by pivotal linkages.

SUPERSEDED

5

36. A kit according to Claim 35 wherein a spring element is positioned to act in use between one of said top portions and the base portion.

-
37. A suspension system for a vehicle seat comprising:
- 10 a top portion;
- a first part having a base portion, means to receive the top portion and means to allow movement of the base portion and top portion towards and away from each other;
-
- a second part comprising a spring element adapted in use to control
- 15 movement of the base portion and top portion towards and away from each other;
- wherein the top portion and the second part are releasably connected to the first part;
- wherein the top portion and the base portion are each provided with an
- 20 upper surface and a lower surface;
- wherein the top portion and the base portion are secured to each other by the provision of at least one pair of pivotally connected arms;
- wherein: a first arm in each pair has one end pivotally secured to the base portion and a second arm in each pair has one end releasably pivotally
- 25 secured to a portion of the top portion;
- the free end of each second arm is provided with means to allow it to move relative to an upper surface of the base portion; and
- the free end of each first arm is provided with means to allow it to move relative to a lower surface of the top portion;
- 30 wherein the top portion is generally rectangular having a pair of opposing short sides, and a pair of opposing long sides;

wherein the means to receive the free end of the or each first arm comprises one or more channels in which the free end of the or each first arm is received and the or each channel is suitably sized to allow movement of the free end of the or each first arm over a lower surface of the top portion within the or each channel as the top part and base part move towards and away from each other.

38. A system according to Claim 37 wherein the spring element is an air spring.

10

39. A system according to Claim 38, wherein the air spring is positioned between the base portion and one of the first and second arms to control movement of the arms relative to the base portion.

15 40. A system according to Claim 38 wherein the air spring is positioned between the first and second arms of the at least one pair of arms to control movement of the arms relative to each other.

41. A system according to Claim 39 or 40 wherein the air spring is positioned on a, or between two, suitable mountings positioned between the first arms or the second arms of a pair of arms.

42. A system according to Claim 37 wherein the spring element comprises one or more mechanical tension springs.

25

43. A system according to Claim 42 wherein the or each mechanical tension spring has a first and a second end and wherein the first end is adapted to act on the free end of the first arm and the second end of the or each mechanical tension spring is secured to the top portion.

30

44. A system according to any of Claims 37 to 43 wherein the or each portion adapted to be releasably secured to each second arm is preferably a wing extending from the opposing long sides and the or each wing is provided with an aperture therethrough.

5

45. A system according to Claim 44 wherein a corresponding aperture is provided through the or each second arm of the first part.

46. A system according to Claim 45 wherein a pivot bolt is provided of a suitable size to pass through the aperture in each wing and in each second arm.

47. A system according to Claim 37 wherein the means to receive the top part and to allow the base portion and the top portion to move towards and away from each other comprise one or more bars designed to extend from the base portion and receive the top portion and being pivotally secured directly between the top portion and the base portion, or by pivotal linkages.

48. A system according to Claim 47 wherein a spring element is positioned to act in use between the top portion and base portion.

49. A method of manufacture of a suspension system substantially as described herein and with reference to the drawings.

25

SUPERSEDED

50. A kit for a suspension system substantially as described herein and with reference to the drawings.

51. A suspension system substantially as described herein and with reference to the drawings.